

Petroleum and Gas Preospects of Western
Kazakhstan and Principal Trends of Regional
Exploration and Prospecting

S/009/60/000/002/001/002
B027/B076

a depth of 6 or 7 kms. The main aim of the regional work is the exploration of the facies and of the petroleum- and gas-bearing Paleozoic Mesozoic and Cainozoic deposits in the various tectonic formations. Further the determination of the large suspected salt plug in the central part of the Caspian depression and also the geological and geophysical investigation on the Ustyurt and Mangyshlak in order to determine the peculiarities, physical properties, depth, and age of the folding of the beds and the general construction of large tectonic formations in these regions. There is 1 figure.

ASSOCIATION: VNIGRI (All-Union Petroleum Scientific Research Institute for Geological Exploration), VNIIGeofizika (All-Union Scientific Research Institute of Geophysical Exploration Methods), VNIGNI (All-Union Petroleum Scientific Research Institute for Geological Exploration)

✓

Card 3/3

D'YAKOV, B.F.; IMASHEV, N.U.; KRUCHININ, K.V.; KOGAN, A.B.:
KOZMODEM'YANSKIY, V.V.; TOKAREV, V.P.; TRIFONOV, N.K.
CHEREPANOV, V.N.; VYALOVA, R.I.

Southern Mangyshlak is a large new oil-bearing region. Geol.
nefti i gaza 5 no.12:4-11 D '61. (MIRA 14:11)

1. Vsesoyuznyy nefteyanoy nauchno-issledovatel'skiy
geologorazvedocheskoye upravleniye i trest Mangyshlakneftegazrazvedka.
(Mangyshlak Peninsula—Oil fields)

VYALOVA, R.I.; D'YAKOV, B.F.; IMASHEV, N.U.; KOZ'MODEM'YANSKIY, V.V.;
KRAYEV, P.I.; KRUCHININ, K.V.; TOKAIEV, V.P.; TRIFONOV, H.K.;
CHEREpanov, N.N.

Southern-Mangyshlak oil- and gas-bearing region. Trudy VNIGRI
no.218:7-50 '63. (MIRA 17:3)

D'YAKOV, B.F.

Geotectonic regionalization and forecast of oil and gas
potentials in the Mangyshlak Peninsula. Trudy VNIGRI no.218:
89-102 '63. (MIRA 17:3)

D'YAKOV, B.F.

Geotectonic zonation chart and prospects of gas and oil content
in the Aral-Caspian areal of warping of the earth's crust.
Geol. nefti i gaza 9 no.1:38-46 Ja '65. (MIRA 18:3)

1. Vsesoyuznyy neftyanoy nauchno-issledovatel'skiy geologoraz-
vedochnyy institut, Leningrad.

MATUSEVICH, M.G., kand.ekon.nauk; PASHKEVICH, O.N., kand.ekon.nauk;
MUKHINA, V.A., mladshiy nauchnyy sotrudnik; MARKOVA, K.Ye., kand.
ekon.nauk; SAVEL'YEV, I.T., mladshiy nauchnyy sotrudnik;
MERETSKAYA, T.A., kand.ekon.nauk; D'YAKOV, B.I., mladshiy nauchnyy
sotrudnik; Prinimali uchastiye: BEL'KO, S.P., mladshiy nauchnyy
sotrudnik; ANDROSOVICH, Ye.I., mladshiy nauchnyy sotrudnik;
KUKHAREV, B.Ye., mladshiy nauchnyy sotrudnik; REUT, S.B., starshiy
statistik. TIMOFEYEV, L., red.; VOLOKHANOVICH, I., tekhn.red.

[Capital assets of industry and their utilization] Osnovnye fondy
promyshlennosti i ikh ispol'zovanie. Minsk, Izd-vo Akad.nauk
BSSR, 1960. 192 p.
(MIRA 14:1)

1. Akademiya nauk BSSR, Minsk. Institut ekonomiki. 2. Institut
ekonomiki AN BSSR (for all, except Timofeyev, Volokhanovich).
(White Russia--Capital)

MATUSEVICH, M.G., kand. ekon. nauk; PASHKEVICH, O.N.; MUKHINA, V.A.,
mlad. nauchnyy sotr.; MARKOVA, K.Ye., kand. ekon. nauk;
SAVEL'YEV, I.T., mlad. nauchnyy sotr.; MERETSKAYA, T.A.,
kand. ekon. nauk; D'YAKOV, B.I., mlad. nauchnyy sotr.;
TIMOFEYEV, L., red.; VOLOKHANOVICH, I., tekhn. red.

[Capital assets of industry and their utilization] Osnovnye
fondy promyshlennosti i ikh ispol'zovanie. Minsk, Izd-vo Akad.
nauk BSSR, 1960. 202 p. (MIRA 16:6)

1. Akademiya navuk BSSR, Minsk. Instytut ekonomiki. 2. Institut
ekonomiki AN BSSR (for all except Timofeyev, Volokhanovich).
(White Russia--Capital)

D'YAKOV, B.P., inzh.

Transposition of conductors on electric power transmission lines.
Elek. sta. 32 no.2:91 F '61. (MIRA 16:7)
(Electric lines—Overhead)

D'YAKOV, B. V.

Aviatsionnaia razvedka na sluzhbe dorozhnykh voisk. (Stroitel'
stvo dorog, 1944, no 9, p.21-22, illus.)

Title tr.: Aerial reconnaissance in service of the transportation
corps.

TEL.573 1944

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of
Congress, 1955.

D'YAKOV, B.V.

8(0)

PHASE I BOOK EXPLOITATION

SOV/3142

Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya

Spravochnyye dannyye po elektrooborudovaniyu (Reference Data on Electric Equipment) Moscow, Mashgiz, 1959. 711 p. (Series: Its: [Trudy] kniga 94)

Errata slip inserted. 6,000 copies printed.

Additional Sponsoring Agencies: USSR. Gosudarstvennaya planovaya komissiya, Glavnoye upravleniye nauchno-issledovatel'skikh i proyektnykh organizatsiy.

Compilers: A.Ye. Gurevich, Engineer, N.A. Vinogradov, Engineer, and B.V. D'yakov, Engineer; Ed.: A.Ye. Gurevich, Engineer; Tech. Ed.: Z.I. Chernova; Managing Ed. for Information Literature: I.M. Monastyrskiy, Engineer.

PURPOSE: The handbook is intended for use in design bureaus for rough drafts and technical designing. For operational designing

Card 1/10

Reference Data (Cont.)

SOV/3142

all handbook data should be checked with catalogs or
comply with the manufacturer's specifications.

COVERAGE: The handbook contains basic data and information on electric motors of special and general purpose, on braking electromagnets and on track and limit switches used in the heavy metallurgical industry. It also contains information on d-c and a-c electric motors and on the equipment used in other branches of industry. The handbook was prepared by the Tsentral'noye konstruktorskoye byuro metallurgicheskogo mashinostroyeniya-TsKEMM (Central Design Bureau of Metallurgical Machine Building) of the TsNIITMASH (Central Scientific Research Institute of Technology and Machine Building), and by the design bureaus of the heavy machinery building industries. It has been used in blueprint form for ten years in many organizations. There are no references.

TABLE OF CONTENTS:

Introduction

3

Card 2/10

Reference Data (Cont.)

SOV/3142

PART I. ELECTRIC MACHINES FOR CRANES AND IN METALLURGY

Ch. I. A-c Induction Motors for Cranes and Metallurgy	6
MT-and MTK-type motors (for normal conditions)	6
MT-and MTK-type motors with SV-class insulation (for tropical climates)	23
Ch. II. D-c Motors for Cranes and Metallurgy	32
MPKPDN-type motors	32
DP-type motors (for tropical climates)	62
DP-type motors (for normal conditions)	74
D-c machines of the MP-14 type	77
D-c vertical motors	86
Ch. III. Roll-train Electric Motors	91
Induction roll-train motors of the AR custom lot type	91
AR custom lot type	91
Roll-train motors of the AZR, AZRF and MAR types	114
Ch. IV. Large D-c Rolling Electric Motors	118
Card 310	

Reference Data (Cont.)

SOV/3142

Rolling motors of the MP type
Mashines of the PBK type

142

Ch. V. Large A-c Induction Rolling Motors
Motors of the AP, APO and DAP types

151

154

Ch. VI. Standard Electric Motor Characteristics
Calculation of mechanical characteristics
Universal characteristics of motors

160

160

161

PART II. ELECTRIC MACHINES OF GENERAL APPLICATION

Ch. VII. A-c Induction Motors of All-Union Custom Lot and Their
Modifications

162

Protected squirrel-cage motors of the A and AL types, of
standard design from 0.6 to 100 kw

162

Totally enclosed ventilated AO- and AOL - type squirrel-cage
motors of standard design from 0.6 to 100 kw

165

Card 4/10

Reference Data (Cont.)

SOV/3142

Protected squirrel-cage motors of the A and AL types from 100 to 400 kw, of the 10th and 11th overall sizes	285
A-and AO-type motors	285
AP-and AOP-type motors with increased torque	285
AS-and AOS-type motors with increased slip	285
AK-type wound-rotor motors	285
Multispeed A and AO-type motors	285
AV-type built-in motors	313
AOLT-31-4 and AOL-42-12-type motors for hoists	313
AOL-and AOLB-type small induction motors	322
Ch. VIII. D-c Machines of General Application	331
PN; PNE and PNV-type machines	331
MP-11 machines	360
MPB-type balancing machines	375
Ch. IX. Various Induction Motors	381
AM-6-type motors	381
GAM-6 and DAM-6-type motors	381

Card 5/10

Reference Data (Cont.)

SOV/3142

Ch. X. Universal Motors

PL--and UL-type commutator motors

MUN--and UMT-type commutator motors

39
39
41

PART III. SYNCHRONOUS AND SPECIAL MACHINES

Ch. XI. Synchronous Machines

GS; GSG; GSD--and DS--type synchronous machines of the 14th and 15th sizes

GS; GSG; GSD; DS--and DSZ--type synchronous machines of the 16 to 18th sizes

MS-320--type synchronous machines

SG and S--type synchronous generators

aPN, KaPN--and aPNT--type synchronous generators

ChS-7--type synchronous generators

SOD-220--and SM--type synchronous generators

40
41
41
42
42
42
42
42

Ch. XII. Special Machines

Rotating amplifiers of the EMU-12, EMU-25, EMU-50, EMU-70, EMU-100 and EMU-110 types

47
47

Card 6/10

Reference Data (Cont.)

SOV/3142

Selsyns of the DI-501, DI-511 and SS-501 types	490
Magslips of the BS-404A, BS-501 A, BD-404A and BD-501 A types	491
Magslip control transformers of the BS-405 type	494
Selsyns of the BS-404A....T, BS-501A....T, BD-404A....T and BD-501A....T types (for tropical climates)	495
Selsyns of the SS-195-150 type	497
Selsyns of the SS-195-135 type	498
D-c machines of the MI type	501
Tachometer generators ET-7/11Q TG-041 and MET-8/55	510
Two-phase induction servomotors of the ASM type	512

PART IV. LOW VOLTAGE EQUIPMENT INSTALLED ON MECHANISMS

Ch. XIII. Brakes and Electromagnets	515
Brakes of the TKT, TKP and TKTQ types	515
Braking electromagnets of the KMT, VM and KMP types	526
D-c electromagnets of the A type	534
Open-make ES-1 pull-push electromagnets	538

Card 7/10

Reference Data (Cont.)

SOV/3142

Electromagnetic connecting and disconnecting valves of the VV-2, VV-4, VV-22 and VV-24 types	541
Winding data of brake and electromagnet coils	547
Stabilizing transformers of the TS-72-60 and TS-144-110 types	554
Ch. XIV. Track and Limit Switches	556
Dust-protected limit switches of the KU type	556
Splash-proof limit switches of the KU type	556
Limit switches of the KU-500 T type	562
Limit switches of the V-10, VU-150, VU-250, VK-100 and VK-211 types	564
Change-over micro-switches of the MP-1 and MP-3 types	571
Track switch of the VK-311 A type (hermetic)	572
Cam controller of the KA-4000 and KA-4000 T types	574
Rotating controller of the KA-5000 type	583
Universal change-over switches of the UP-5100 type	597
Universal pole-changing switch for multispeed motors of the UP-5200 type	609

Card 8/10

Reference Data (Cont.)

SOV/3142

Rotary change-over switches for multispeed motors of the PK-25 and PK-60 types	618
Rotary switches and change-over switches of the PK type	622
Control pushbuttons of the KU and LKU types	626
Ch. XV. Centrifugal Switches and Mechanical Relay for Rotations Control	632
Ch. XVI. Inductive Feelers	642
Inductive feelers of the IV-110T and IV-120T types	642
Inductive feelers of the IKV-10, IKV-20 and IKV-30 types	643
Magnetic amplifiers of the TUM, TRM, UM and UMS types	650
Magnetic amplifiers of the MU....T type	656
Ch. XVII. Pulse Apparatus for Automation	658
Flag indicator switches	658
Photoelectronic apparatus of the FEA-10 and FEA-20 types	672
Metallurgical photorelays of the FRS-53, FRS-55, FRS-8, and FRS-12 types	678

Card 9/10

Reference Data (Cont.)

SOV/3142

Electromagnetic feeler of the EMD-1 type
Contact rollers

703

705

Ch. XVIII. Electromagnetic Clutches

708

Electromagnetic multidisk friction clutches of the EM type

708

AVAILABLE: Library of Congress

Card 10/10

JP/jb
1-26-60

D. YANKE, B. U.

PHASE I BOOK EXPLOITATION

SOV/5451

Moscow. Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya.

Spravochnyye dannyye po elektrooborudovaniyu (Reference Data on Electric Equipment) Moscow, Mashgiz, 1960. 607 p. (Series: Its: [Trudy] v. 95) Errata slip inserted. 13,500 copies printed.

Sponsoring Agency: Gosudarstvennyy komitet Soveta Ministrov SSSR po avtomatizatsii i mashinostroyeniyu and Tsentral'nyy nauchno-issledovatel'skiy institut tekhnologii i mashinostroyeniya (TsNIITMASH).

Compilers: A. Ye. Gurevich, Engineer, and B. V. D'yakov, Engineer; Ed.: A. Ye. Gurevich, Engineer; Ed. of Publishing House: K. N. Ivanova; Tech. Ed.: A. Ya. Tikhonov; Managing Ed. for Information Literature: I. M. Monastyrskiy, Engineer.

PURPOSE: This handbook is intended for use in design offices for Card 1/10

Reference Data (Cont.)

SOV/5451

rough drafts and technical designing. For operational designing all handbook data should be checked with catalogs or comply with the manufacturer's specifications.

COVERAGE: The handbook contains technical data, overall dimensions, and characteristics of mercury-arc and crystal rectifiers, electric-drive control apparatus, and electric instruments. Furthermore, it contains information on the new single series d-c machinery which is being introduced in industry in place of general-purpose machinery of earlier manufacture. The handbook is a continuation of the TsNIITMASH volume 94, which appeared as SOV/3142. No personalities are mentioned. There are no references.

TABLE OF CONTENTS:

PART I. MERCURY-ARC AND CRYSTAL RECTIFIERS

Ch. I. RMNV Series Pumped Metal Mercury-Arc Rectifiers

Card 2/10

3

Reference Data (Cont.)

SOV/5451

Technical data and characteristics of RMNV mercury-arc rectifiers	3
Brief description of the design	9
Rectifier control cabinets	17
Mercury-arc rectifier supply circuits	26
Substations and connection diagrams	35
Connecting rectifier with transformer and power supply of auxiliary devices	35
Transformers for the power supply of metal mercury rectifiers	41
High-speed plate breakers	53
Ch. II. Pumpless Metal Mercury-Arc Rectifiers	
RM-300 mercury-arc rectifiers	60
RM-200 mercury-arc rectifiers	60
RM-500 mercury-arc rectifiers	64
	65
Ch. III. Mercury-Arc Rectifiers With Glass Bulbs	
Type VARZ and VARS glass-bulb mercury-arc rectifiers	66
	66
Card 3/10	

Reference Data (Cont.)

SOV/5451

Ignitrons

73

Ch. IV. Crystal Rectifiers

Selenium rectifiers

77

Cuprous-oxide rectifiers

77

Germanium rectifiers

120

Silicon rectifiers

127

138

PART II. ELECTRICAL EQUIPMENT AND
NOMENCLATURE OF STANDARD CONTROL STATIONS

Ch. V. Electromagnetic D-C Contactors

KP-1 contactors

141

KP-2 contactors

141

KP-5 and KP-15 contactors

148

KP-7 and KP-207 contactors

151

KP-500 contactors

153

KP-900 A contactors

157

172

Card 4/10

References Data (Cont.)

SOV/5451

Ch. VI. Electromagnetic A-C Contactors	
KT-9002, KTV-9002, and KTV-9402 block-contactors	175
KT-200 and KT-4200 contactors	175
KTP-500 contactors	184
	191
Ch. VII. Control and Protection Relays	
RE-100 and ERE-100 electromagnetic d-c relays	201
RE-180 and ERE-180 electromagnetic d-c relays	201
RE-70 maximum electromagnetic d-c relay	205
RE-500 electromagnetic d-c relay	209
RE-60 electromagnetic d-c relay	212
RE-570 and RE-570T maximum electromagnetic relays	215
REV-300 electromagnetic d-c relay with a high reset factor	216
DT polarized electromagnetic reverse-current relay	218
RE-190 electromagnetic three-phase current relay	219
RE-2100 electromagnetic a-c relay	222
EP-41B intermediate electromagnetic a-c relay	224
RE-218 electromagnetic a-c timer	228
RVE-2, ERV-99, and ERV-60 electronic timers	229
	231

Card 5/10

References Data (Cont.)

SOV/5451

MRV-26 and MRV-27 motor-type time relays	235
PRV-02 programming time relay	237
E-58 and RVT-1200 multicircuit time relays	240
MKU-48 and MKU-48S telephone relays	244
RSI pulse-counting relay	257
TRP thermal relays	258
Specifications of relay windings	262
Ch. VIII. Start-Regulating Apparatus	
Magnetic starters	267
PK-113 push-button starter	267
AP-25 automatic breakers	277
A-3100 adjusting air circuit-breakers	278
Fuses	281
LS-53 signal lamp	291
Contact couplings	297
Terminal blocks and clamp sets	298
Step-down transformers	298
	301

Card 6/10

References Data (Cont.)

SOV/5451

Ch. IX. Resistors and Rheostats

Resistance boxes	303
Permanent enameled tubular wire resistors	303
Starting rheostats with oil cooling	309
RZV, RV, R, RVM (with servodrive), MR, and RShN excitation regulators	317
RP and RZP d-c starting rheostats	325
RZR start-regulating rheostats	334
	337

Ch. X. Control Stations

D-c motor control stations	339
Control stations of wound-rotor induction motors	339
Control stations of irreversible squirrel-cage induction motors	355
Control stations of reversible squirrel-cage induction motors	365
Control station of multispeed induction motors	383
Control stations of low-voltage synchronous motors	399
	427

Card 7/10

References Data (Cont.)

SOV/5451

PART III. MEASURING INSTRUMENTS AND SUPPLEMENTARY
INFORMATION ON ELECTRIC MACHINERY

Ch. XI. Electric Measuring Instruments	431
D-c switchboard instruments	431
A-c switchboard instruments	438
D-341 active power ferromagnetic wattmeters	443
M-323/1 recording switchboard d-c instruments	446
D-33 recording switchboard a-c instruments	447
Instrument multipliers for type R-103 and R-105 wattmeters	450
75RP, 75ShP, 75ShS, and 100 ShS calibrated shunts	451
Ch. XII. Instruments for Measuring Nonelectrical Quantities	457
Type P-1 "Produktimeter" [Gage for measuring gaps between rolls and guides, and r pm counter]	457
Selsyn rate indicators	458
Type SUR-10T and SUR-20T selsyn (autosyn) rate indicator	458

Card 8/10

References Data (Cont.)

SOV/5451

SOCh-2 and SOCh-5 tachometers of long-distance rate indicators	461
Type S-57-51 pressure relay	463
Type EMK-3M contact electromicrometer	464
Contactless X-ray micrometer	467
Photoelectric width gage	467
TIM-500 inductive tensiometer of TsNIITMASH	470
Inductive, capacitive, and foil strain gages	470
Devices for measuring band and tape tension	481
Ch. XIII. Supplementary Information on Electrical Machines	487
New series of metallurgical electric motors	487
DP series d-c motors	487
New AO series motors of the "Elektrosila" plant	498
Series MP-12 compensated d-c machines	500
Large rolling machines and converter sets	505
Ch. XIV. D-C Machines of Single Series P	515
Series P machines of 1 to 11 overall dimensions	515

Card 9/10

References Data (Cont.)

SOV/5451

Series P machines of 12 to 17 overall dimensions	545
Compensated motors with wide velocity regulation and generators	545
Compensated motors for the main drives of irreversible mills	573
Compensated motors with reduced flywheel moment designed for the drive of frequently reversing mechanisms	573
Characteristics of series P machines	600
Ch. XV. New Single Series of Three-Phase Induction Motors of 1.1 to 100 kw (Preliminary Information)	605

AVAILABLE: Library of Congress

Card 10/10

JP/dfk/ec
7-29-61

GUREVICH, A.Ye., red.; D'YAKOV, B.V., red.

[Reference data on electrical equipment] Spravochnye dannye po elektrooborudovaniyu. Moskva, Energiia. Vol.1. 1964. 326 p. (MIRA 18:1)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy i proyektirovko-konstruktorskiy institut metallurgicheskogo mashinostroyeniya.

GUREVICH, A.Ye.; D'YAKOV, B.V.

[Reference data on electrical equipment] Spravochnye dannye po elektrooborudovaniyu. Moskva, Energiia. Vol.2. 1965. 482 p. (MIRA 18:7)

1. Moscow. Vsesoyuznyy nauchno-issledovatel'skiy i proyektno-konstruktorskiy institut metallurgicheskogo mashinostroyeniya.

DYAKOV, D.

Bulgaria

Academic Degree not given

Chair for Children Diseases at the Higher Medical
Institute in Sofia (Katedra po detski bolesti pri
VMI -- Sofia); director: Prof. L. RACHEV.

Sofia, Pediatrica, supplement of Suvremenna Meditsina,
No 3, 1962, pp 58-61.

"Sarcoma-Leukemia in Young Children"

D'YAKOV, D.D., kandidat tekhnicheskikh nauk, redaktor [deceased];
ZADOROZHNYI, A.I., redaktor; RODOMANOV, P.S., redaktor; TIKHONOV,
S.N., redaktor; KONOVALOVA, Ye.K., tekhnicheskii redaktor

[Pulse radionavigation aids. Translated from the English] Impul'snye
radionavigatsionnye ustroistva. Perevod s angliiskogo. Pod red. D.D.
D'iakova. Moskva, Voen. izd-vo Ministerstva obr. SSSR, 1955. 487 p.
(MIRA 10:1)

1. Massachusetts Institute of Technology. Radiation Laboratory.
(Loran) (Radar)

D.YAKOV, D.V.

VYSOTSKIY, A.V., inzhener; D'YAKOV, D.V., inzhener.

Device for the automatic removal of frequency characteristics
in the sound band. Sbor.nauch.trud.IETIIZHT no.6:225-232 '54.
(Electric measurements) (MLRA 9:1)

PHASE I BOOK EXPLOITATION 30V/4426

Leningrad: Institut Inzhenerov zheleznodorozhnogo transporta
Avtomatika, telemekhanika i svyaz' (Automation, Telemechanics,
and Communications) Moscow, Transzheldorizdat, 1960. 230 p.
(Series: Itz. Sbornik, vyp. 169) 1,000 copies printed.

General Ed.: V. N. Ilyev, Professor; Ed.: O. I. Marenkova,
Engineer; Tech. Ed.: Ye. N. Bobrova.

PURPOSE: This book is intended for technical personnel and scientists engaged in the fields of automation, telemechanics, and communications.

CONTENTS. This collection of 41 articles presents various methods of analysis and synthesis of electric circuits. New designs are described and ways of improving technical and economic indices of communication instruments investigated. The articles contain computations for individual types of communication and telemechanical systems. No personalities are mentioned. Some of the articles are accompanied by references.

Mykelo, A. J. "Weather-Resistant Methods of Submarine Multichannel Radio Relay Communications for Wire-Communication on Ballistic and Selection of Multichannel Equipment." 123
 The paper describes the design of a multichannel radio relay system for submarine communication. The system is designed to operate in the radio band of 10-15 MHz and is capable of transmitting and receiving signals simultaneously in radio relay communication and subchannels for wire communication systems. Included also are methods of channel formation and separation for various types of transmission services.

130

Stefanikova, D. Ya., Candidate of Technical Sciences, Doctor. Investigation of the Possibility of Using a Reflex Klystron as the Output Stage of a Pulse-Modulation Transmitter of a Radio Relay System.

Having determined the useful power, pulse shape distortion and the stability of radio pulse frequency of reflex klystrons, the author concludes that they may be used as output stages of radio relay pulse transmitters operating on short range communication links of railroad stations.

Alkova, I. A., Candidate of Technical Sciences, Doctor. Piezoelectric Filter With Elastic Mechanical Bonds Between Crystals.

The author presents several variants of bridge circuits with quartz piezoelectric arms and gives formulas for the design of a quartz filter with mechanical bonds. There are two references, both Soviet.

135

Public, & Graduate of Technical Sciences, Degree: **198**
Ranking of the University Research Communications
 Multiple of the design division communications which
 employed as telephone conversations between railroad
 employees within the limits of a railway division
 approximately 150 to 200 kilometers long. There are 3
 references, A11 30000.

166
 Approved by the
 Candidate of Technical Sciences, Doctor. May
 of Improving the Construction of Telegraph Offices
 This article describes the construction and suggests methods of
 actions resulting in the improvement of the construction of
 telegraph offices.

CONTRACTS—The American Association of Economic Consultants has announced that it will accept contracts from the Federal Reserve Board for studies of the effects of monetary policy on business activity.

AVAILABLE: Library of Congress

Card 11/11

JP/ma/00
11-2-50

11-2-50

D'YAKOV, D.V., inzh.

Wobbling-frequency generators with ferrite cores for use in
cathode-ray tracers. Sbor. LIZHT no.169:162-176 '60.

(MIRA 13:11)

(Oscillators, Electric)

(Cathode-ray oscillograph)

D'YAKOV, D.V., inzh.

Measurement of the y_{21} parameter of low-power transistors.

Sbor. trud. LIIZHT no.186 Elektrosviaz' i radiotekhnika:

87-98 '62.

(MIRA 16:7)

(Transistors--Measurement)

TYURIN, Viktor Leonidovich, kand. tekhn. nauk, dots.; LISTOV,
Vladimir Nikolayevich, doktor tekhn. nauk, prof.;
Prinimali uchastiye: SEMENYUTA, N.F., inzh.; D'YAKOV,
D.Y., inzh.; MIKHNOVICH, B.P., kand. tekhn. nauk, dots.;
ANISIMOV, N.K., dots.; BAGUTS, V.P., assistant; NOVIKAS,
M.N., red.

[Telecommunication] Dal'niaia sviaz'. Izd.3., perer. i
dop. Moskva, Transport, 1964. 470 p. (MIRA 17:12)

D'YAKOV, F. A.

PA 162T9

USSR/Electricity - Boilers, High-Pressure Jun 50
Welding, Arc

"Experiment in Welding High-Pressure Steam Pipes,"
F. A. D'yakov, Engr

"Elek Stanta" No 6, pp 45-46

Describes experiment in various types of welding
which shows electric arc welding is superior to gas
welding from mechanical, metallographical, and eco-
nomic standpoints for large and small diameter
pipes, whatever thickness of heating surface. Rec-
ommends exclusive use of arc welding for this type
work.

162T9

COMMON ELEMENTS										COMMON VALENCE AGES									
1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCESSES AND PROPERTIES INDEX										115									
<p> DIYAKOV, F.A. <i>Ca</i> </p>																			
<p> The physiology and the practical use of the so-called fertility vitamin E. P. A. Diakov. <i>Vistnik Cheshkoslov. Akad. Zemdel'ski 9, 367-4(1933)</i>; <i>Chem. Zentr. 1933, II, 3005</i>.—The activity of a prepn. of vitamin E, prepd. by the chem. factory in Kolin, was tested according to the Evans test and found to be effective. The expts. of Verzar could not be reproduced. Doses of 0.3-0.60 cc. weekly did not influence the sexual maturity of animals. The pituitary hormone cannot replace vitamin E, and a deficiency of this vitamin in the body leads to other troubles than the incomplete development of the ovum. </p>										<p> M. G. Moore </p>									
<p> ASH-SLA METALLURGICAL LITERATURE CLASSIFICATION </p>										<p> EXTRACT </p>									
<p> EXTRACT </p>										<p> EXTRACT </p>									

DYAKOV, F. H.
CA

1102

Determination of biological values of proteins in some
odders from the standpoint of pathology, growth, and
nutrition. P. A. Dyakov (Státní výzkum. ústav, Brno,
Czech.). *Sborník Českoslov. Akad. Zemědělské 22*, 601-23
(1950).—In feeding rats, proteins derived from one source
do not supply all essential amino acids required for normal
growth and other biol. functions of the animal organism.
The growth and other biol. functions depend on the quality
of the proteins and the ability to assimilate them. From
the proteins of plant origin, barley proved to be of the high-
est biol. value, followed by maize, soybeans, and yeast. It
appears that the sudden death of some rats fed on the soy-
bean ration was not due to inability to assimilate the S-
contg. amino acids but due to the toxic effect of some sub-
stances of soybeans (antitrypsin). Ground alfalfa leaves
have absolutely no biol. value for the rats. Of the proteins
of animal origin, fish meal proved to have the highest biol.
value, except that the excess of mineral ions caused the in-
testinal disturbances which later on affected adversely the
growth of the rats. Meat meal (scrap) proteins if used as
the only source of N, were inadequate for growth and other
biol. functions of the rats. Dried blood, if used as the only
source of N, owing to the lack of essential amino acids, was
absolutely inadequate for normal growth, development,
and other biol. functions of the rats. Jan Micka

1951

DYAKOV, F. M., Eng.

Gases - Analysis

Proper utilization of electric gas analyzers. Elek. sta. 23, No. 2, 1953.

Monthly List of Russian Accessions, Library of Congress, June 1953. Uncl.

D'YAKOV, F.S. (Leningrad)

Reconditioning of piezoelectric plates. Put' 1 put. khoz. no.6:19
Je '59. (MIRA 12:10)

(Railroads--Electric equipment)
(Piezoelectric substances)

D'YAKOV, F.S. (Leningrad); GUSEV, S.A., inzh. (Leningrad); KUZNETSOV, L.N.,
mekhanik (Leningrad)

Improve the quality of defectoscopes. Pat' i put.khoz. 8 no.6:46 '64.
(MIRA 17:9)

D'YAKOV, G.A.

All-purpose mobile hoist for stripping concrete slabs. Suggested
by G.Z. D'iakov. Rats. predl. no. 41:11-12 '59. (MIRA 14:1)
(Hoisting machinery)

DYAKOV, G. I.

PA 175T103

USSR/Physics - Magnetostriction

11 Jan 51

"Law of Approach to Saturation of Even Effects With
Consideration of Elastic Stress," G. I. Dyakov, Phys
Res Inst, Moscow State U imeni Lomonosov

"Dok Ak Nauk USSR" Vol LXXVI, No 2, pp 201-204

Computed magnetostriction in nondeformed polycryst
ferromagnetic. Divergence of curves of magnetostric-
tive susceptibility of deformed and nondeformed sam-
ples may be due to change of spin under elastic stress.

175T103

D'YAKOV, G. P.

PA 57T87

USSR/Phys
Magnetostriction
Nickel

Nov/Dec 1947

"Temperature Dependence of Magnetostriction of Nickel,"
G. P. D'yakov, Sci Res Inst Phys, Moscow State U,
8½ pp

"Izv Akad Nauk SSSR, Ser Fiz" Vol XI, No 6, pp 667-75.

Gives report of experimental research on temperature
dependence of magnetostriction of saturation and proof
of Akulov's theory in entire interval of temperatures
from the Curie point to the temperature of liquid
nitrogen.

57T87

D'YAKOV, G. P.

USSR/Physics - Magnetism
Magnetostriktion
Sep 49

"The Principle of Approximation to Saturation,
of Magnetostriktion, Galvanomagnetic, and Other
Even Effects," G. P. D'yakov, Sci Res Phys Inst,
Moscow State U Imeni M. V. Lomonosov, 4 pp

"Dok Ak Nauk BSSR" Vol LXVIII, No 1

Introduces calculations to show that, if constant
of magnetic natural anisotropy is known, magneto-
strictive constants of a monocrystal of a material
can be determined by measuring saturation magneto-
striction and magnetostriktion as saturation is

2/50T105

USSR/Physics - Magnetism
Magnetostriktion (Contd)
Sep 49

approached in a polycrystalline body. Submitted
by Acad S. I. Vavilov 6 Jul 49.

2/50T105

CA

Chemistry 2

Law of approach to saturation of even effects, taking account of diffuse elastic stresses in materials with low magnetostriction anisotropy. G. P. D'yakov. *Vestnik Mosk. Univ.* 6, No. 6, Ser. Fiz.-Mat. i Estestven. Nauk No. 4, 45-52(1951); cf. C.A. 46, 5381g. For the case in which diffuse elastic stresses are present, the magnetostriction of a polycryst. material is found to be $\lambda = \lambda_0 [1 - \{(32K^2/35I^2) + \{(9K/5I^2)F\} \} (1/I^2)]$, where K is the const. of magnetic anisotropy. Differentiating this expression with respect to I gives the differential magnetostriction susceptibility χ_1 , which is a linear function of I^{-1} . Thus the magnitude of the elastic stresses can be detd. from the plot of $\chi_1 = f(1/I^2)$. These results can be extended to any even effect. These theoretical formulas should be verified by measurements on Fe-Ni alloys with Ni content of about 60% or 87% since their magnetostriction consts. with respect to all the crystallographic axes are equal. Ellen H. Dunlap

CA

Law of approach to saturation applied to even effects taking into account inner elastic tensions. G. P. D'yakov (M. V. Lomonosov State Univ., Moscow). *Doklady Akad. Nauk S.S.S.R.* 76, 201-4(1951).—Theoretical calcns. are given of: (1) the magnetostriction of a monocrystal, subjected to elastic deformation, in a strong magnetic field, during the approach to satn.; (2) the magnetostriction of a polycryst. ferromagnetic, taking into account diffuse elastic tensions; in this case the even effects depend on the diffuse elastic tensions only to degrees higher than the first; (3) the law of approach to satn. when the direction of the elastic deforming force coincides with the direction of the external magnetic field. The differences in the magnetostriction curves (and hence in the magnetostriction susceptibility) of deformed and undeformed samples of the same compn. is attributed to changes of rotation due to the elastic tensions.

Ellen H. Dunlap

D'YAKOV, G. I.

FA 242T105

USSR/Physics - Magnetism

Jun 52

"Problem of Diffuse Elastic Stresses in the Law for Approach to Saturation of Even Effects," G. P. D'yakov, Lab of Magnetism

"Vest Moskov U, Ser Fiz, Mat, i Yest Nauk" No 4, pp 23-28

Author generalizes his previous investigations (ibid. 6 (1951)) and derives law for approach to satn of even effects taking into account diffuse stresses for materials anisotropic in respect to magnetostriction. Received 25 Feb 52.

242T105

D'YAKOV, G. F.

USSR/Physics - Magnetostriction

Aug 52

"Problem of the Influence of Homogeneous Elastic Stresses on the Law of Approximation to Saturation of Odd Effects," G. P. D'yakov, Chair of Magnetism

Vest Mos Univ, Ser Fizikomat i Yest Nauk, No 5, pp 89-93

Extension of his previous study (ibid. No 5, 1951) of the effect of homogeneous elastic stresses on the magnitude of the even effect in the problem of the magnetostriction of single-crystals in strong fields. Received 25 Feb 1952.

272T96

MAKOV, G. P.

Magnetostriction

Problem of diffuse elastic stresses in the law of the approach of even effects to saturation. Vest. Most. un. no. 6, 1952.

9. Monthly List of Russian Accessions, Library of Congress, December 195¹/₂, Uncl.

1. D'YAKOV, G. P.
2. USSR (600)
4. Magnetostriction
7. Influence of uniform plastic stresses on the law of approximation to saturation in even effects. Vest. Mosk. un. 7 no. 8, 1952.
9. Monthly List of Russian Accessions, Library of Congress, March 1953. Unclassified.

D'YAKOV, G. P.

PA 236T81

USSR/Physics - Magnetostriction

Nov 52

"Theory of Magnetostriction and of Other Even Effects in Strong Magnetic Fields," G. P. D'yakov, Moscow State Univ

"Zhur Eksper i Teoret Fiz" Vol 23, No 5, pp 525-531

Subject theory is developed for polycrystalline ferromagnetics. Formulas for computation of even effects in nontextured materials are established. Two limiting cases are discussed. Received 10 May 52.

236T81

D'YAKOV, G. P.

USSR/Physics - Magnetism

21 Feb 52

"Generalization of the Law of Approximation to Saturation of Even Effects," G. P. D'yakov, Sci Res Inst of Phys, Moscow State U imeni Lomonosov

"Dok Ak Nauk SSSR" Vol LXXXII, No 6, pp 867, 868

A report given at the 19 Apr 51 Lomonosov lectures in the Phys Sec, Moscow State U. Subject generalization is made by taking 2 limiting cases: diffusive elastic stresses and homogeneous elastic stresses. Submitted by Acad V. V. Shuleykin 16 Nov 51.

214T81

D'YAKOV, G.P.; MIRYASOV, N.Z.; TELESNIN, R.V.

Nikolai Sergeevich Akulov; on his 50th birthday. Uch. zap.
Mosk. un. no.162:3-7 '52. (MLRA 8:7)
(Akulov, Nikolai Sergeevich, 1900--)

D'YAKOV, G.P.

Investigation of the law of approximation to the saturation
of "even" effects. Uch. zap. Mosk. un. no.162:85-106 '52.

(MLRA 8:7)

(Crystallography) (Magnetostriction)

62 ✓ Investigation of the Magnetostriction of Nickel-Iron Alloys in Strong Magnetic Fields. G. P. D'yakov and R. A. Reznikova (*Doklady Akad. Nauk S.S.S.R.*, 1964, 171, (4), 633-634).— [In Russian]. D. and R. measured the dependence of the magnetostriction of Ni-41% Fe alloy on the magnetizing force (H), using Goldman's method (*Phys. Rev.*, 1947, [1], 72, 529; *M.A.*, 15, 453); the strain gauges were of Nichrome wire of 18 μ dia. The alloy was prepared by melting carbonyl Fe and electrolytic Ni in an induction furnace under Mo glass as flux, casting two cylinders, drawing these out into wires 260 mm. \times 2.6 mm. dia., annealing for 2 hr. at 800° C. and cooling slowly in the furnace. The results are shown as plots of $(\lambda_s - \lambda)$ versus H^2 ; lines of slope $\tan \phi = 1.11 \times 10^{-2}$ and 1.16×10^{-2} , resp. being obtained for the two specimens. This confirmed the formula obtained by D. (*ibid.*, 1949, 63, 33; *M.A.*, 20, 630): $\lambda = \lambda_s \left(1 - \frac{32 K^2}{35 J_s^2 H^2} \right)$, where λ_s is the saturation magnetostriction, K the const. of magnetic anisotropy, and J_s the saturation magnetization. From this $\tan \phi = 32 K^2 / 35 J_s^2$. By measurement, $J_s = 1175$ gauss and $\lambda_s = 18.44 \times 10^{-3}$, so that $K = 9.8 \times 10^3$ ergs/c.c. This agrees well with the value of $K = 11 \times 10^3$ ergs/c.c. obtained experimentally for an alloy with nearly the same composition by Vonsovsky and Shur ("Ferromagnetism," 1948), and that of $K = 6 \times 10^3$ obtained by Puzel (*Izv. Akad. Nauk S.S.S.R.*, 1952, [Fiz.], 16, 552) for an alloy contg. 68.2% Ni. —G. V. E. T.

Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova. Predstavleno akademikom V. V. Shuleykinym.

"APPROVED FOR RELEASE: 08/22/2000

CIA-RDP86-00513R000411720007-9

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CIA-RDP86-00513R000411720007-9"

USSR/Magnetism - Ferromagnetism

F-4

Abs Jour : Referat Zhur - Fizika, No 5, 1957, 11986

Author : D'yakov, G.P.

Inst : -

Title : Even Effects in Single Crystals.

Orig Pub : Vestn. Mosk. un-ta, 1956, No 5, 43-48

Abstract : The author calculates the magnetostriction of a cubic single crystal for the (111) plane in the region close to saturation in the case, when the magnetizing field also lies in the (111) plane. This problem can be solved if one can find the direction of the vector of spontaneous magnetization I_s with respect to the axes of the crystal, but the direction of I_s is in most cases unknown. Therefore, the inverse problem is solved, whereby the stable position of the spontaneous-magnetization vector in the crystal is solved knowing the direction and the magnitude of the magnetic field H in the region of approach to

Card 1/2

D'yakov, G. P.

AUTHOR: D'yakov, G. P.

126-1-24/40

TITLE: On taking into account the second constant of anisotropy in the theory of even effects. (K uchetu vtoroy konstanty anizotropii v teorii chetnykh effektov).

PERIODICAL: Fizika Metallov i Metallovedeniye, 1957, Vol.5, No.1, pp. 161-162 (USSR)

ABSTRACT: In an earlier paper (Ref.1) the author showed that the law of approaching saturation of even effects for materials which are isotropic from the magnetostriction point of view is determined by the equation:

$$\lambda = \lambda_s \left(1 - \frac{32}{35} \frac{K_1^2}{I_s^2} \frac{1}{H^2} \right), \quad (1)$$

where λ_s is the saturation magnetostriction,

I_s - the intensity of saturation magnetisation and

K_1 - the first anisotropy constant.

In further work (Refs.2 and 3) the author considered the influence of elastic stresses on the shape of the

Card 1/2

- 126-1-24/40
- On taking into account the second constant of anisotropy in the theory of even effects.

magnetostriction curve in the range approaching saturation; in the first approximation this problem was solved for orientated elastic stresses, the direction of which coincided with the direction of the magnetic field. It was shown that diffusion stresses do not enter into the magnetostriction formula if the considerations are limited to the first resolution terms. The final equation for expressing the magnetostriction of isotropic materials, taking into account the first and second anisotropy constants, is Eq.(8), p.162 and it can be seen that the terms contained in the second anisotropy constant may exceed considerably those of the term determined by the first anisotropy constant. Thus, by taking into consideration the second anisotropy constant the behaviour of the magnetostriction in the range of strong magnetic fields is described more fully.

Card 2/2

There are 4 references, 3 of which are Slavic.
SUBMITTED: Feb.4, 1956 (Initially), March 5, 1957 (After revision)
ASSOCIATION: Physics Faculty, Moscow State University.
(Fizicheskiy Fakul'tet MGU).
AVAILABLE: Library of Congress.

D'YAKOV, G.P.

The magnetostriction theory of isotropic materials. Vest.Mosk.un.
Ser.mat.,mekh.,astron.,fiz., khim. 12 no.3:75-78 '57.
(MIRA 11:3)

1.Kafedra obshchey fiziki Moskovskogo gosudarstvennogo universiteta.
(Magnetostriction)

D'YAKOV, G.P.; YUGOV, V.A.

New type of strain gauge for measuring magnetostriction. Vest. Mosk.
un. Ser. mat., mekh., astron., fiz. khim., 12 no.5:229-230 '57.
(MIRA 11:9)

1. Kafedra obshchey fiziki dlya fizicheskogo fakul'teta Moskovskogo
gosudarstvennogo universiteta.
(Strain gauges) (Magnetostriction)

D'YAKOV, G. P.

AUTHOR: D'yakov, G. P.,

48-8-14/25

TITLE: Investigation of Magnetostriction and Other Even Effects Within the Domain of the Approximation to Saturation (Issledovaniye magnitostriksii i drugikh chetnykh effektov v oblasti podkhoda k nasyshcheniyu)

PERIODICAL: Izvestiya AN SSSR, Ser. Fiz., 1957, Vol. 21, Nr 8, pp. 1135-1139 (USSR)

ABSTRACT: First it is said that under the interaction of transformatory forces and the forces of the anisotropy of the crystals of ferromagnetic materials the domains of spontaneous magnetization are formed. The magnetic moment of every domain is formed in such a manner that the full energy of the crystal attains the minimum value. A geometrical sum of the magnetic moments of spontaneous magnetization results in the magnetization of the crystal. If the equilibrium of the moments is denoted by L_i and corresponding capital volumes by n_i , the magnetization of the crystal can be expressed by the formula: $J = J_s \sum_{i=1}^{i=k} n_i L_i$. Under the effect of various factors the values n_i , L_i and J_s may change, which expressed itself by the modification of the degree of magnetization of the crystal. With magnetization of the monocrystal the modifi-

Card 1/3

Investigation of Magnetostriction and Other Even Effects With- 48-8-14/25
in the Domain of the Approximation to Saturation.

cation of its magnetostriction, of the electric resistance, and other factors takes place. According to Akulov the magnetostriction of the monocrystal magnetized up to saturation is determined according to the following law of anisotropy:

$$\lambda = 3/2 \lambda_{100} (\sum s_i^2 g_i^2 - 1/3) + 3 \lambda_{111} \sum s_i s_j g_i g_j, \text{ where } s_i - \text{direction}$$

ion cosine of the vector J_s corresponding to the tetragonal axes of the crystal, g_i - direction cosine of the direction of measuring, λ_{100} and λ_{111} magnetostriction of saturation along the edge and the diagonal of the cube. The same formula is also used when computing the modification of Ohm resistance. The author declares that considerable interest is caused here by the solution of the inverse problem: To determine a stable position of the vector J_s according to known data concerning the magnetic field. This problem is said not to have been solved as yet. Only in the sense of magnetic saturation this problem is already solved. Next, the theory of magnetostriction according to the English physicist Lee is given in detail. In the course of computations the final values for the constants λ_{100} and λ_{111} are obtained:
 $\lambda_{100} = -49 \cdot 10^{-6}$ $\lambda_{111} = -27 \cdot 10^{-6}$.

Card 2/3

Investigation of Magnetostriction and Other Even Effects Within 48-8-14/25
the Domain of the Approximation to Saturation.

In conclusion the problem is dealt with as to whether the formula of the isolated crystal can be applied also in the case of the microscopic monocrystal of which the metals used in technical engineering consist. In answer to this question the corresponding works by Néel (J.Phys. et Rad., 15, 376(1954)) are mentioned, in which connection it is said eventually that the physical conditions used by Néel as a basis for the computation of the magnetic co-action among crystals are very approximative and cannot be confirmed in practice. There are 4 figures and 10 references, 6 of which are Slavic.

ASSOCIATION: Dept. of Physics, of Moscow State University imeni M.V.Lomonosov
(Fizicheskii fakultet Moskovskogo gos. universiteta imeni M.V. Lomonosova)

AVAILABLE: Library of Congress.

Card 3/3

D'yakov, G. P.

24(1)	PHASE I BOOK EXPLOITATION	SOV/3150
	Vsesoyuznaya konferentsiya professorov i prepodavateley pedagogicheskikh institutov	
	Primeneniye ultrazvukov k issledovaniyu veshchestv; trudy konferentsii, Vyp. 7 (Application of Ultrasonics for Analysis of Substances; Transactions of the All-Russian Conference of Professors and Teachers of Pedagogical Institutes, Nr 7) Moscow, Izd. MURL, 1958. 283 p. 1,500 copies printed.	
	Tech. Ed.: S. P. Zaitov; Eds.: V. P. Mordukh, Professor, and E. B. Kucharsky.	
	PURPOSE: This book is intended for physicists, technicians, aeronautical engineers and other persons concerned with ultrasonics.	
	COVERAGE: The book contains twenty eight articles which treat ultrasonic phenomena in five general categories: 1) historical data on the development of ultrasonics in the Soviet Union over the past forty years; 2) the speed of sound in suspensions of varying concentration and number and type of components and the relationship between sound velocity and the compressibility of electrolytes; 3) ultrasonic investigations of physical and chemical properties of materials and the determination of physical and chemical constants, e. g. density of aqueous solutions, adiabatic compressibility, solubility of solutions (with given temperature), viscosity, etc.; 4) ultrasonic investigations of the ultrasonic investigation of the carbon content and petrographic state of coal; 5) industrial applications of ultrasonics, e. g. emulsification of reagents, cleansing of textile fibers and enhancing the acceptability of some synthetic fibers to dyeing, etc.; and 5) apparatus which produce ultrasonic waves. No personalities are mentioned. References accompany each article.	
	Mikhailov, I. G. and Yu. P. Syrnitsky. The Problem of the Compressibility of Solutions of Electrolytes	65
	Larionov, M. I., M. A. Baibiyev, and Q. V. Goryachko. Investigations of the Physical and Chemical Properties of Aqueous Solutions of Diamethyl Formate in the Temperature Interval From 20 to 90°C With the Ultrasonic and Other Methods	75
	Gryushechennikov, M. P. Investigation of the Speed of Ultrasound in Methylalene and Hypoculite in the Range of Phase Reversals of the First Order	91
	Goryachko, G. V. The Dependency of the Absorption of Ultrasound Upon Its Intensity	101
	Goryachko, Ye. M. The Use of Ultrasound to Create Periodic Structures	105
	Bryukhatov, M. L., and G. P. D'yakov. Some New Magnetostrictive Materials	111
	Savinikhina, A. V. Ultrasonic Method of Determining the Saturation Pressure of Plastic Liquids	121
	Orishin, A. P. Ultrasonic Method of Investigating the Crystallization Process of Paraffinic Petroleum Products	127
	Katayev, A. I., and Ye. G. Karynov. Speed of Propagation of Transverse Ultrasonic Waves in Coal	135
	Kirillov, O. D. Emulsification of Plotation Reagents by Ultrasonic Waves	143
	Greshnev, A. I. Investigation of the Effect of Sound and Ultrasound on the Physical and Hygienic Properties of Fibers During Purification Process	149
	Goryachko, G. V., M. A. Baibiyev, and M. I. Larionov. Application of Ultrasound During Dyeing of Polyacrylonitrile Fibers of the "Nitron" Type	161

D'YAKOV, G. P. (Moscow University)

"Calculation of the Domain Structure of the Theory of Magnetization and
Magnetostriction of Monocrystals."

paper presented at the All-Union meeting on Magnetic Structure of Ferromagnetics
June 1958, in Krasnoyarsk. Meeting sponsored by Inst. of Physics, Acad. Sci. USSR,
and Comm. for Magnetism, Dept Phys-Math Sci, AS USSR,

24(3)

Author: D'yakov, G.P., Candidate of Physical-Mathematical Sciences SOV/55-58-2-34/35

TITLE: Survey of Papers Read by Scientists of Moscow University at the All-Union Congress on the Physics of Magnetic Materials (Obzor dokladov uchenykh moskovskogo universiteta na vsesoyuznom soveshchanii po fizike magnitnykh materialov)

PERIODICAL: Vestnik Moskovskogo Universiteta. Seriya matematiki, mekhaniki, astronomii, fiziki, khimii, 1958, Nr 2, pp 247-250 (USSR)

ABSTRACT: From December 6 - 11, 1957 there took place the fourth Union Congress on physics of magnetic materials in Leningrad. (The first two meetings took place 1946 and 1951 in Sverdlovsk, the third meeting 1956 in Moscow). The congress was organized by : Academy of Sciences of the USSR, Department of Physical-Mathematical Sciences, Scientific Council on Fundamental Problems of Magnetism, Institute for Semiconductors of the Academy of Sciences, USSR and Committee for Magnetism. There were more than 300 participators, 59 lectures were given, among them the following lectures of the representatives of the Moscow State University :

1. Professor R.V. Telesnin, Ye.F. Kuritsyna, Lecturer "On the

Card 1/4

Survey of Papers Read by Scientists of SOV/55-58-2-34/35
Moscow University at the All-Union Congress on the Physics of Magnetic Materials

- Velocity of Magnetic Reversal of the Ferromagnetica".
2. Professor R.V. Telesnin, Ye.V. Karchagina, Assistant
"On Magnetic Viscosity of Ferrites".
 3. Professor R.V. Telesnin, A.G. Shishkov, Aspirant
"Effect of Magnetic Viscosity on the Frequency Characteristics
of Ferrites".
 4. M.V. Degtyar, Lecturer "Variations of Structure and Anti-
ferromagnetic Properties of Ni_3Fe ".
 5. M.A. Grabovskiy, Lecturer, S.Yu. Brodskaya, Junior Scientific
Assistant "Magnetic Properties of Anisotropic Stones".
 6. G.P. D'yakov, Lecturer "Magnetostriction Properties of
Binary Alloys".
 7. Professor Ye.I. Kondorskiy, L.V. Sobolev, Assistant
"Electric Properties of Ni-Zn-Ferrites".
 8. N.Z. Miryasov, Senior Scientific Assistant, A.P. Parsanov,
Aspirant "Magnetic Properties and Structure of Manganese -
Boron - Alloys".
 9. N.A. Smol'kov, Senior Scientific Assistant, B.F. Belov
"Some Properties of Ferrites".

Card 2/ 4

Survey of Papers Read by Scientists of SOV/55-58-2-34/35
Moscow University at the All-Union Congress on the Physics of Magnetic Materials

10. N.A. Smol'kov, Senior Scientific Assistant, Yu.P. Simanov, Lecturer "Properties of NiFe_2O_4 - MgFe_2O_4 ".
11. N.A. Smol'kov and Ye.I. Fomenko, Engineer "Properties of Ferrites in the High-Frequency Range".
12. Professor K.P. Belov, K.M. Bol'shova, Lecturer, T.A. Yelkina, Lecturer, and M.A. Zaytseva, Junior Scientific Assistant "Ferrites With Compensation Point".
13. K.P. Belov, Ye.V. Talalayeva, Assistant "Electric and Galvanomagnetic Properties of the Manganese Ferrites".
14. V.A. Timofeyeva, Junior Scientific Assistant, A.V. Zalesskiy "Production of Monocrystals of Ferrites".
15. Professor K.P. Belov, A.V. Ped'ko, Junior Scientific Assistant "On Galvanomagnetic Properties of Ferromagnetic Alloys Near the Absolute Zero of Temperature".

The participators of the meeting visited a laboratory of the Institute of Semiconductors of the Academy of Sciences of the USSR (Professor G.A. Smolenskiy).

The meeting was concluded by Professor S.V. Vonsovskiy, Corresponding Member, Academy of Sciences, USSR with the

Card 3/4

A Survey of the Lectures of the Scientists of SOV/55-58-2-34/35
Moscow University at the All-Union Congress on the Physics of Magnetic Materials

indication to the following Union Congress planned for
1958.

1. Magnetic Resonance and Galvanomagnetic Effects in Kazan'.
2. Ferromagnetic Semiconductors (Ferrites) - in Minsk.
3. Blast-Furnace Structure of the Ferromagnetics and Barkhausen Effects - in Krasnoyarsk.

Card 4/4

24

24(3)

AUTHOR:

D'yakov, G.P.

SOV/55-58-3-29/30

TITLE:

Approximation to the Saturation of the Iron Magnetostriction
(Priblizheniye k nasyshcheniyu magnitostriksii zheleza)

PERIODICAL:

Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki,
astronomii, fiziki, khimii, 1958, Nr 3, pp 235-236 (USSR)

ABSTRACT:

This is a short information that the author succeeds, by means of the method applied to nickel and described in [Ref 1,2], in obtaining experimental data on the approximation to the saturation of the iron magnetostriction. It is experimentally confirmed that

$\frac{d\lambda}{dH} \cdot H^2$ is a linear

function of $\frac{1}{H}$:

$$\frac{d\lambda}{dH} \cdot H^2 = a + \frac{b}{H}, \quad a = \frac{8}{35} \cdot \frac{K}{I_s} (\lambda_{111} - \lambda_{100})$$

Card 1/2

Approximation to the Saturation of the Iron
Magnetostriction

SOV/55-58-3-29/30

$$b = \frac{K^2}{I_s^2} \left(\frac{64}{1001} \lambda_{100} + \frac{1968}{5005} \lambda_{111} \right)$$

The values of λ_{100} and λ_{111} for polycrystalline iron calculated by the author by means of this formulas coincide with the values of Takaki for monocrystals.
There are 2 Soviet references.

ASSOCIATION: Kafedra obshchey fiziki (Chair of General Physics)

SUBMITTED: April 21, 1958

Card 2/2

25

24(3)

AUTHORS:

D'yakov, G.P. and Yugov, V.A.

SOV/55-58-3-30/30

TITLE:

Measuring of the Magnetostriction With the Aid of a Film Tensiometer (Izmereniye magnitostriksii s pomoshch'yu ple-
nochnogo tenzometra)

PERIODICAL:

Vestnik Moskovskogo universiteta, Seriya matematiki, mekhaniki,
astronomii, fiziki, khimii, 1958, Nr 3, p 237 (USSR)

ABSTRACT:

This is a short note on the development of a new type of
tensiometers in which thin layers (films) of constantan and
other materials obtained by methods of vaporization in the
vacuum are used as resistance tensiometers. The first note
was published in Vestnik Moskovskogo universiteta, Seriya
mat., mekh., astron., fiz., khimii, 1957, Nr 5.

ASSOCIATION:

Kafedra obshchey fiziki (Chair of General Physics)

SUBMITTED:

April 21, 1958

Card 1/1

USCOMM-DC-60,526

66525

SOV/112-59-18-37938

Translation from: Referativnyy zhurnal, Elektrotehnika, 1959, Nr 18, p 8 (USSR)

AUTHORS: Bryukhatov, N.L., D'yakov, G.P.

TITLE: Some New Magnetostriction Materials

PERIODICAL: V sb.: Primeneniye ul'trazvukust. k issledov. veshchestva. Nr 7, Moscow. 1959, pp 111 - 119

ABSTRACT: Magnetostriction transducers (MT) are widely used for the generation of supersonic waves (SW). For powerful SW generators MT possess considerable advantages compared to the piezo-electric ones. For SW emitters polycrystalline Ni is used in most of the cases. However, Ni single crystals have strongly expressed anisotropy of magnetostriction properties. In the Ni crystal not only magnetostriction properties are different in different crystallographic directions but also the Young modulus, specific electric resistance etc. The development of the polycrystalline Ni in which the crystal grains were oriented in such a way that the direction along the edge of the cube (100) for all crystals would be parallel to each other

Card 1/2

4

66525

-Some New Magnetostriction Materials

SOV/112-59-18-37938

would raise in this direction the magnetostriction by 40% compared to the usual Ni. The investigations showed that high-purity Ni with a suitable structure is, while it preserves its anticorrosive effect, a new material increasing the efficiency of magnetostriction vibrators. 11 references.

A.O.M.

4

Card 2/2

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68205
SOV/58-59-5-11520

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 5, pp 229 - 230 (USSR)

AUTHORS: Bryukhatov, N.L., D'yakov, G.P.

TITLE: Some New Magnetostrictive Materials

PERIODICAL: V sb.: Primeneniye ul'traakust. k issled. veshchestva. Nr 7, Moscow, 1958, pp 111 - 120

ABSTRACT: The authors suggest a method for the thermomechanical treatment of polycrystalline nickel, which leads to the formation of a "cube texture". The treatment consists in cold rolling with intense reduction and subsequent annealing in hydrogen at 1,100°C with slow cooling. High-purity electrode nickel is used as the starting material. The crystallographic "cube texture" is characterized by an orientation of the (100) axis in the direction of rolling. When the magnetograms of the mechanical moments of textured nickel are compared with those of single-crystal nickel, it is seen that in the case of the above-mentioned treatment the percentage of regularly-oriented crystals amounts to 90%. In connection with this the measured magnetic-field dependence of magnetostriction for textured nickel is close to the corresponding dependence for the single crystal. The

Card 1/2

Some New Magnetostrictive Materials

68205
SOV/58-59-5-11520

authors compared the magnetostriction curves for high-purity nickel subjected to thermomechanical treatment with those for the ordinary nickel employed for magnetostriction transducers; the curves for textured nickel are steeper. In addition, saturation magnetostriction for textured nickel attains a value of 50×10^{-6} , while for ordinary nickel it amounts to $\sim 30 \times 10^{-6}$. An experimental magnetostriction transducer was built from nickel subjected to the described treatment. The properties of this transducer were compared with those of a standard emitter. The comparison showed that the textured-nickel emitter is more efficient and requires a smaller magnitude of excitation current. The receiving sensitivity of the textured-nickel transducer is also markedly higher than the sensitivity of a standard receiver. The bibliography contains 11 titles.

I.P. Golyamina

Card 2/2

sov/58-59-4-8328

Translation from: Referativnyy Zhurnal Fizika, 1959, Nr 4, p 140 (USSR)

AUTHOR: D'yakov, G.P.

TITLE: Allowance for the Second Constant of Anisotropy in the Theory of the
Magnetostriction of Isotropic Substances

PERIODICAL: Tr. Vses. zaochn. energ. in-ta, 1958, Nr 9, pp 146 - 148

ABSTRACT: Growing out of the author's previous studies (Dokl. AS USSR, 1949, Vol 68, p 33; 1951, Vol 76, p 201), in which a formula for magnetostriction in the neighborhood of saturation was derived taking into account the first constant of anisotropy and elastic stresses in the case of weakly anisotropic substances, the present formula presents a more general form with allowance for the second constant of anisotropy. It is noted that if the magnitude of the second constant of magnetic anisotropy is large, the corresponding term in the formula for magnetostriction possesses a more substantial value than the term containing the first constant.

K.P. Gurov

Card 1/1

AUTHOR: D'yakov, G. P.

SOV/126-6-1-23/33

TITLE: A New Method of Determining Monocrystal Magnetostriction Constants (O novom metode opredeleniya monokristal'nykh konstant magnitostriksii)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr 1, pp 168-170 (USSR)

ABSTRACT: The author's earlier calculation (Ref.1) is extended to show that the derivative of the magnetostriction susceptibility with respect to H for the strong-field case (Eq.1), gives Eq.(4), in which the two constants (for polycrystals) are related in a simple fashion to λ_{111} and λ_{100} (for monocrystals). Fig.1 gives some experimental results for nickel strips 150 mm long, 10 mm wide and 0.1 mm thick, and, assuming reasonable values for the constants appearing in Eqs.(5) and (6), very good agreement with the directly measured λ values is obtained. The paper concludes with an examination of whether formulae derived for monocrystals are applicable to microscopic polycrystals; Fig.2 indicates that mechanical and magnetic interaction effects in

Card 1/2

SOV/126-6-1-23/33

A New Method of Determining Monocrystal Magnetostriction Constants

technical nickel at least, do not alter the result. Neel's assumptions on this subject, (Ref.3), must, therefore, be only very approximately correct. There are 2 figures, 7 equations and 4 references, 2 of which are Soviet, 1 French, 1 English.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni
M. V. Lomonosova (Moscow State University imeni
M. V. Lomonosov)

SUBMITTED: March 5, 1957

Card 2/2

1. Single crystals--Magnetic properties 2. Single
crystals--Mechanical properties 3. Magnetostriction--
Determination 4. Mathematics--Applications

AUTHORS: D'yakov, G. P. and Kozlov, A. A. SOV/126-6-3-32/32

TITLE: On Calculating the Magnetostriction in Strong Magnetic Fields (K raschetu magnitostriksii v sil'nykh magnitnykh polyakh)

PERIODICAL: Fizika Metallov i Metallovedeniye, 1958, Vol 6, Nr3, p 576 (USSR)

ABSTRACT: In the work of one of the authors of this paper (Refs.1 and 2) relating to the investigation of the magnetostriction in the range of strong magnetic fields, the law is derived of approach to saturation magnetostriction and other even effects. These calculations show that in the given range the magnetostriction fields can be expressed thus:

$$\lambda = \lambda_s \left(1 - \frac{A}{H} - \frac{B}{H^2} \right) \quad (1)$$

In the case of materials which are isotropic from the magnetostriction point of view and for which

Card 1/4 $\lambda_{100} = \lambda_{111}$, Eq.(1) can be written thus:

SOV/126-6-3-32/32

On Calculating the Magnetostriction in Strong Magnetic Fields

$$\lambda = \lambda_s \left(1 - \frac{32}{35} \frac{\kappa^2}{I_s^2} \frac{1}{H^2} \right) \quad (2)$$

Similar calculations were effected by Lee (Ref 3) which again resulted in the Eqs.(1) and (2). In further investigations of this problem, the internal elastic stresses (Ref 4), the magnetic interaction between the crystallites (Ref 5) and the paraprocess (Ref 6) were taken into consideration. However, in all the above enumerated papers the law of approach to saturation was limited to the terms containing H^{-1} and H^{-2} . The authors of this paper considered it of interest to investigate to what extent it is justified to disregard the term containing H^{-3} in Eq.(1). Applying the method which was described in earlier work (Ref 1), the authors obtained, for materials which are isotropic from the magnetostriction point of view, a law of approach to saturation which can be written thus:

Card 2/4

SOV/126-6-3-32/32

On Calculating the Magnetostriction in Strong Magnetic Fields

$$\lambda = \lambda_s \left(1 - \frac{B}{H} - \frac{c}{H^2} \right), \quad (3)$$

$$B = \frac{32}{35} \frac{\kappa^2}{I_s^2}, \quad (4)$$

$$c = \frac{4608}{5005} \frac{\kappa^3}{I_s^3} \quad (5)$$

The carried out calculations permit determining the magnitude of the term c/H^2 which was disregarded without any justification in earlier work as being of small value. It will now be evaluated how much larger the second term of Eq.(3) is than the third term, which is usually disregarded:

Card 3/4

$$\frac{B}{H^2} : \frac{c}{H^3} \approx \frac{I_s H}{\kappa} \quad (6)$$

SOV/126-6-3-32/32

On Calculating the Magnetostriction in Strong Magnetic Fields

It can be seen from Eq.(6) that if $I_s H \gg \kappa$, then the third term of the series, Eq.(3) is really small and can be disregarded. Knowing the value of I_s and κ for an investigated material, it is possible in each concrete case to determine the importance of the term containing H^{-2} in the law of approach to saturation. There are 6 references, 4 of which are Soviet, 2 English.

(Note: This is a full translation)

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni
M. V. Lomonosova (Moscow State University imeni
M. V. Lomonosov)

SUBMITTED: March 18, 1957

1. Magnetic fields--Analysis 2. Magnetostriction--Mathematical
analysis

Card 4/4

USCOMM-DG-55798

AUTHOR: D'yakov, G. P. SOV/48-22-10-17/23

TITLE: Magnetostriction Properties of Binary Alloys (Magnitostriksionnyye svoystva binarnykh splavov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1958, Vol 22, Nr 10, pp 1254 - 1258 (USSR)

ABSTRACT: The present article describes the results of investigations on the magnetostriction of binary Fe-Ni alloys. These alloys are remarkable not only for their practical importance but also for their special magnetostrictive behaviour (see reference 12). The intricate character of the dependence of the magnetostriction is due, in a certain degree, to the special features of the magnetostriction the monocrystals of the Fe-Ni alloys show in different crystalline directions. For the investigations, 5 samples with a nickel content of 40 to 100% were used. The succession of thermal treatment and the duration of annealing the first of the 4 alloys were analogous to those employed by I.M.Puzey on monocrystals. Test results (see Fig 1) show that the

Card 1/3

Magnetostriction Properties of Binary Alloys

SOV/48-22-10-17/23

magnetostrictive sensibility in the range near saturation is, indeed, a linear function of H^{-1} . Small deviations of the values of the constants calculated by authors from those given by Lee (Li) may be caused by a certain diversity in the purity and thermal treatment of the samples, which are of great influence on the degree of magnetostrictive sensibility. Constants of magnetostriction of pure nickel and nickel alloys were measured. Final results are given in figure 3. For comparison the data of Lichtenberger are also shown. Good agreement is found between the results, for λ_{100} and λ_{111} , obtained by measuring the polycrystalline samples, and the results of Lichtenberger. The greatest difference from the data of Lichtenberger was found for the alloy of 39.92%. Probably, the influence of the magnetostriction sensibility of the paraprocess has to be considered. There are 3 figures and 15 references, 10 of which are Soviet.

Card 2/3

Magnetostriction Properties of Binary Alloys

SOV/48-22-10-17/23

ASSOCIATION: Fizicheskiy fakul'tet Moskovskogo gos.Universiteta imeni
M.V.Lomonosova (Physics Dept. of Moscow State University
imeni M.V.Lomonosov)

Card 3/3

24(3)

AUTHORS:

D'yakov, G. P., Yugov, V. A.

SOV/48-23-3-34/34

TITLE:

On the Report by I. M. Puzey and B. V. Molotilov (Po dokladu I. M. Puzeya i B. V. Molotilova). "Magnetostriction of the Alloys Nickel-iron-molybdenum" (Vol 22, Nr 10, p 1244) ("Magnitostriksiya splavov nikel'-zhelezo-molibden" (t.22, No 10, str.1244)). Use of Thin Films as Resistance Tensimeters for Measuring Magnetostriction (Primeneniye tonkikh plenok v kachestve tenzometrov soprotivleniya dlya izmereniya magnitostriksii)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Seriya fizicheskaya, 1959, Vol 23, Nr 3, p 424 (USSR)

ABSTRACT:

In the report great attention was paid to the completion of the method of measuring magnetostriction. This problem is without any doubt of great importance. In this connection the results of measurement are given which were determined by means of new tensimeters of thin films. Thin films of Constantan and other substances were used as resistance tensimeters; they were applied to the sample by evaporation in vacuum. The first experiments were carried out with an oxidized nickel sample. Magnetostriction was measured at all

Card 1/2

On the Report by I. M. Puzey and B. V. Molotilov. SOV/48-23-3-34/34
"Magnetostriction of the Alloys Nickel-iron-molybdenum" (Vol 22, Nr 10,
p 1244). Use of Thin Films as Resistance Tensiometers for Measuring Magneto-
striction

angles possible between the direction of measurement and the applied magnetic field. The measuring results are given on the figure. Herefrom can be seen that longitudinal magnetostriction is twice as big as transversal magnetostriction. This is in agreement with the second formula for even Akulov effects. The positive results obtained with new tensiometers indicate that the latter will find a wide field of application in measuring magnetostrictive and other deformations. There is 1 figure.

Card 2/2

USCOMM-DC-61,000

D'YAKOV, G. P.

PHASE I BOOK EXPLOITATION

SOV/5526

Vsesoyuznoye soveshchaniye po magnitnoy strukture ferromagnetikov, Krasnoyarsk, 1958.

Magnitnaya struktura ferromagnetikov; materialy Vsesoyuznogo soveshchaniya, 10 - 16 iyunya 1958 g., Krasnoyarsk (Magnetic Structure of Ferromagnetic Substances; Materials of the All-Union Conference on the Magnetic Structure of Ferromagnetic Substances, Held in Krasnoyarsk 10 - 16 June, 1958) Novosibirsk, Izd-vo Sibirskogo otd. AN SSSR, 1960. 249 p. Errata slip inserted. 1,500 copies printed.

Sponsoring Agency: Akademiya nauk SSSR. Institut fiziki Sibirskogo otdeleniya. Komissiya po magnetizmu pri Institute fiziki metallov OFMN.

Resp. Ed.: L. V. Kirenskiy, Doctor of Physical and Mathematical Sciences; Ed.: R. L. Dudnik; Tech. Ed.: A. F. Mazurova.

PURPOSE: This collection of articles is intended for researchers in ferromagnetism and for metal scientists.

Card 1/11

Magnetic Structure (Cont.)

SOV/5526

COVERAGE: The collection contains 38 scientific articles presented at the All-Union Conference on the Magnetic Structure of Ferromagnetic Substances, held in Krasnoyarsk in June 1958. The material contains data on the magnetic structure of ferromagnetic materials and on the dynamics of the structure in relation to magnetic field changes, elastic stresses, and temperature. According to the Foreword the study of ferromagnetic materials had a successful beginning in the Soviet Union in the 1930's, was subsequently discontinued for many years, and was resumed in the 1950's. No personalities are mentioned. References accompany individual articles.

TABLE OF CONTENTS:

Foreword	3
Shur, Ya. S. [Institut fiziki metalloy AN SSSR - Institute of Physics of Metals, AS USSR, Sverdlovsk]. On the Magnetic Structure of Ferromagnetic Substances	5
Card 2/11	

Magnetic Structure (Cont.)

SOV/5526

D'yakov, G. P. [Fizicheskiy fakul'tet MGU - Physics Department of the Moscow State University]. Accounting for the Domain Structure in the Calculation of Magnetostriction 21

Kirenskiy, L. V., and M. K. Savchenko [Institut fiziki SO AN SSSR - Institute of Physics, Siberian Branch AS USSR, Krasnoyarsk]. On the Spatial Distribution of the Domain Structure in Ferromagnetic Substances 25

Druzhinin, V. V., and T. I. Prasova [Verkh-Isetskiy metallurgicheskiy zavod - Verkh-Isetskiy Metallurgical Plant]. On the Application of the Powder-Figure Method to the Study of the Magnetic Properties of Transformer Steel 29

Kirenskiy, L. V., and I. F. Degtyarev [Institute of Physics, Siberian Branch AS USSR, Krasnoyarsk]. Temperature Dependence of the Domain Structure in Crystals of Iron Silicide 33

Card 3/11

Magnetic Structure (Cont.)	SOV/5526	
of a Hysteresis Loop		195
Kirenskiy, L. V., A. I. Drokin, and D. A. Laptey [Institute of Physics, Siberian Branch AS USSR, Krasnoyarsk]. Effect of Elastic and Plastic Deformations on the Magnitude of Thermo-magnetic Hysteresis		201
Margolin, S. D., and I. G. Fakidov [Institute of Physics of Metals AS USSR, Sverdlovsk]. Magnetic Studies of Alloys of the Manganese - Germanium System		211
Kirenskiy, L. V., and B. P. Khromov [Institute of Physics, Siberian Branch AS USSR, Krasnoyarsk]. Study of the Approach-to-Saturation Law on Monocrystals of Iron Silicide		217
D'yakov, G. P. [Physics Department of the Moscow State University]. Current State of the Problem Concerning the Study of Parity Effects in the Approach-to-Saturation Region		227
Card 10/11		

D'YAKOV, G. P., Doc Phys-Math Sci -- (diss) "Investigation of magnetostriction and other even effects in strong magnetic fields." Moscow, 1960. 20 pp, (Moscow State Univ im Lomonosov, Physics Faculty), 200 copies, price not given, bibliography at end of text (23 entries), (KL, 17-60, 137)

S/188/60/000/03/06/008
B019/B056

AUTHOR: D'yakov, G. P.

TITLE: The Properties of Polycrystalline Ferromagnetics in the
Region of Strong Magnetic Fields ^γ

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika,
astronomiya, 1960, No. 3, pp. 42 - 52

TEXT: The author studies the present stage of the theory of even effects in the region near saturation magnetization in strong fields. Proceeding from the formula for magnetostriction (1) which was derived in a previous paper (Ref. 1), he derives a formula for the magnetostriction as a function of the external field. It is shown to be possible to determine the monocrystalline magnetostriction constants by measurements carried out on polycrystalline samples. It is pointed out that the rules obtained here for magnetostriction in the region near saturation may be extended also to other even effects. Further, the determination of the magnetic anisotropy constant is dealt with, and on the basis of experimental results, the modern theory on the magnetic interaction of crystals is discussed. The ^γB

Card 1/2

The Properties of Polycrystalline Ferromagnetics S/188/60/000/03/06/008
in the Region of Strong Magnetic Fields B019/B056

author here refers to results obtained by Lee (Refs. 2, 4), and further,
I. M. Puzey (Ref. 5), I. L. Gus'kova (Ref. 9), K. V. Vladimirovskiy (Ref. 13),
and Ye. I. Kondorskiy (Ref. 14) are mentioned. There are 5 figures and
18 references: 13 Soviet, 4 American, and 1 German.

ASSOCIATION: Kafedra obshchey fiziki (Chair of General Physics) ✓ B

SUBMITTED: November 4, 1959

Card 2/2